

ABSTRACT

The invention is directed to an apparatus for producing demineralized osteoinductive bone. The apparatus demineralizes bone by subjecting bone, including, for example, ground bone, bone cubes, chips, strips, or essentially intact bone, to either a rapid high volume pulsatile acidification wave process or to a rapid continuous acid demineralization process. The pulsatile acidification wave process includes subjecting bone to two or more rapid pulse/drain cycles in which one or more demineralizing acids is rapidly pulsed into a vessel containing bone, and after a desired period of time, is rapidly drained from the vessel. The continuous acid demineralization process includes subjecting bone to a continuous exchange of demineralizing acid solution in which the demineralizing acid solution is recirculated from the container holding the bone through an ion exchange media. Calcium and phosphate are thereby removed from the bone to produce a regenerated acid, and the regenerated acid is returned to the container holding the bone. Both processes allow bone to be rapidly demineralized to a precise and specific desired residual calcium level without sacrificing osteoinductivity.